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(58) Field of search

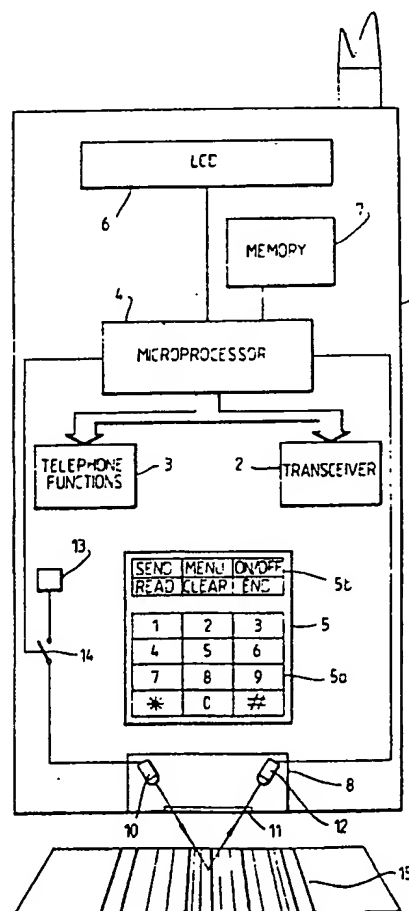
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(54) A telephone incorporating a bar code reader for reading subscriber number information

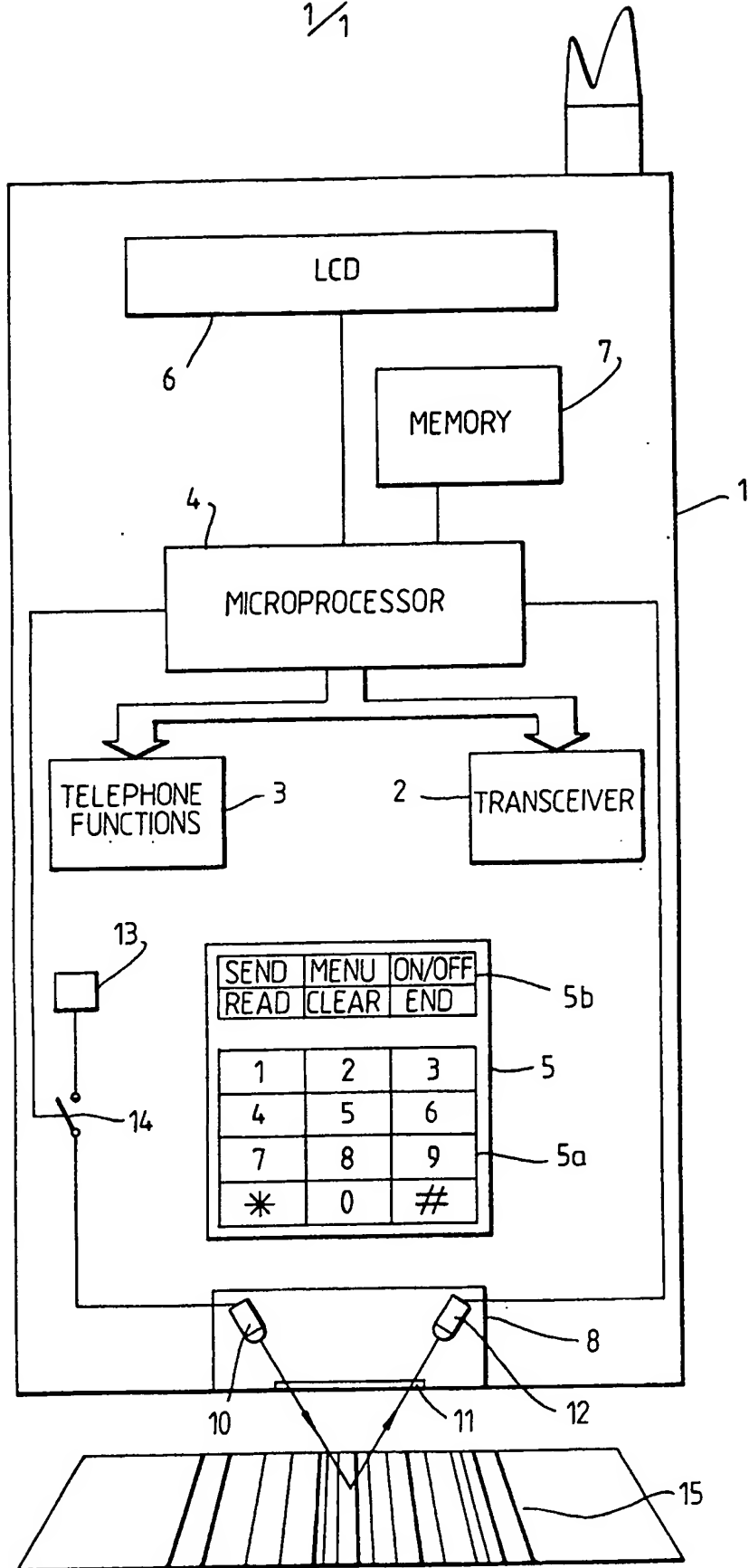
(57) The subscriber number is transferred automatically from an external bar code 15 by the reader 8 to a memory 7 in the telephone. Data input is thus quick and easy, and less prone to error because the need for manual entry via a keypad is eliminated. A facility may be included whereby dialling of a newly-entered number or a particular number selected from the memory 7 is initiated simply by actuating a single "SEND" key 5b.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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TELEPHONE WITH BAR CODE READER

This invention relates to a telephone, for example a cellular radio telephone, including memory means for storing data.

It is common practice nowadays for cellular telephones to include a memory for storing a plurality of subscriber numbers for reference purposes. For example the TECHNOPHONE TP2 (Trade mark) portable telephone manufactured by the applicant is capable of storing upto 99 telephone numbers. In addition this particular product offers a speed dialling facility whereby the telephone will automatically call a number stored in a particular location when the user simply enters on the telephone keypad the two digit memory location (01-99) of the desired number, and then depresses the "SEND" key. Thus a maximum of only three keystrokes are required to make an outgoing call to a number which is stored in the memory.

However, the subscriber numbers stored in the memory must initially be entered in full by the user from the telephone keypad. This can be a relatively tedious process as each digit of the telephone number must be entered in turn and it is very easy for the user inadvertently to enter one or more wrong digits especially when entering a long number.

According to the present invention there is provided a telephone comprising memory means, and a bar code reader for reading data from a bar code external to said telephone, the bar code reader being coupled to the memory means for transferring to said memory means

data corresponding to the data read from the bar code.

Suitably the bar code contains a telephone subscriber number and the information stored in the memory is a plurality of telephone subscriber numbers in which case the memory effectively constitutes a form of telephone number index or directory.

A telephone in accordance with the invention has the advantage that data such as telephone numbers can be entered into the memory means quickly and easily simply by holding or swiping the bar code reader of the telephone over a bar code to be read without the user having to enter the numbers manually. Hence the entry of information is much less prone to error. Means such as a switch or key may be provided on the telephone for actuating the bar code reader so that it need not be permanently activated.

Entering telephone numbers directly through the medium of bar codes means that the telephone can automatically enter telephone numbers printed in bar code format for example on letterheadings, in advertisements, in magazines, on business cards and other stationery etc. Moreover, a subscriber may himself be issued with, or have printed, a batch of adhesive labels on which is printed his telephone number in bar code format so that the subscriber can use these labels on his or her own stationery etc whereby the recipient, who is in possession of a compatible telephone in accordance with the invention, can readily store that telephone number into his or her own telephone number index.

In a preferred embodiment the telephone comprises means for selecting one of the subscriber numbers, and

actuation means for initiating dialling of the selected number. This has the advantage that a number stored in the memory can be dialled using minimal key strokes and therefore with much less risk of incorrect dialling.

Furthermore the actuation means may be used to initiate dialling of a telephone number at the time it is first read by the bar code reader. Hence a telephone in accordance with the invention can be used to automatically and immediately dial a telephone number from a printed bar code again reducing the risk of incorrect dialling.

Preferably the telephone comprises display means for visually displaying data read from the bar code at the time the bar code is first read and/or when the respective data is recalled from memory. The visual display means presents the data read from a bar code in an intelligible form for immediate information and subsequently enables the user to see at a glance the contents of the memory means.

The bar code reader may be provided integrally with the telephone, or as an accessory removably connectable thereto.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which

the single Figure is a schematic diagram of a portable cellular telephone in accordance with the present invention.

The portable radio telephone shown in the Figure is a cellular telephone 1 suitably powered by a rechargeable battery pack (not shown). The telephone 1 includes a transceiver 2 and all the other functions conventionally found in a cellular telephone. Since these aspects of the telephone are not directly relevant to the instant invention no further details will be given here, except to say that a microprocessor 4 is employed to control all the basic functions of the telephone and to control the keypad and display functions (discussed below).

The user-interface of telephone 1 comprises a display, e.g. a liquid crystal display 6 itself well-known in the art, and a keypad 5 on the front of the telephone 1. The display is coupled to and regulated by the microprocessor 4 in the usual manner. The keypad 5 essentially comprises two main sets of keys, namely alpha-numeric keys 5a associated with alpha-numeric data especially for dialling telephone numbers, but also (optionally) for manually entering alphanumeric data into a subscriber number index memory 7 and a set of function keys 5b for enabling various predetermined functions or operations.

The keys 5a are arranged in four rows of three keys each. As is conventional for the numeric key layout of a telephone, the top row comprises keys for numbers 1, 2 and 3 respectively, the second row down for numbers 7, 8 and 9 respectively, and the bottom row for *, 0 and # respectively. Some or all of these keys may also be associated with alphabet information, as again is quite conventional. The alphabetic rather than numeric data is selected from example by preceding the alphanumeric keystroke with another predetermined keystroke or set of keystrokes, specifically using the

function keys. Hence the alphabetic data mode may be enabled for example by preceding the particular keystroke with previously depressing a "MEMORY" or "STORE" key disposed among the function keys 5b.

As is usual in the UK and USA cellular telephones, the keys 5b include a "SEND" and "END" key for respectively initiating and terminating a telephone call. Another key, is an "ON/OFF" key for turning the telephone on and off, i.e. by connecting and disconnecting the battery pack power supply to the telephone/transceiver circuits. Another of the function keys may be a menu or function key labelled, for example, "MENU" or "FUNCTION" or with a suitable abbreviation thereof. Depression of this key enables a variety of pre-set menus, the related instructions of which are stored in memory, to be viewed and selectively enabled. The various menus are selected by depressing the appropriate alphanumeric keys after depressing the "MENU" or "FUNCTION" key. The relevant menu is shown to the user in words or abbreviations on the display panel 6. For example, the user may be able to select the ringing tone by appropriate menu selection. More sophisticated options may also be available via the menu facility. For example, the user may be able to enable the so-called Discontinuous Transmission mode which employs a voice activated switch which helps to reduce battery drain by transmitting only when speech is input to the microphone. A further key actuates a bar code reader 8 discussed below.

A bar code reader 8, itself of conventional construction, is mounted centrally in the base of the telephone 1. The bar code reader comprises a light source 10, a lens or window 11 for directing the light

from the source 10 to an external bar code 15 to be read; and a light detector 12 for receiving the light reflected back from the bar code. Any suitable scheme may be used to encode the data in the bar code. The decoding operation may be performed by the microprocessor 4. Alternatively, the bar-code reader 8 may include a compatible decoder (not shown) for recovering the information content of the code.

The bar code reader 8 may be of the type which needs to be manually swiped or scanned across the bar code 15. In this case the reader 8 generates a serial data signal indicative of the data encoded in the bar code. Alternatively the bar code reader 8 may be of the type which automatically scans the entire bar code while the bar code reader itself remains stationary. In either case the detector 12 is coupled by a data link to the memory 7 via microprocessor 4. Thus the data from the bar code can be stored in the memory 7 which preferably is a non-volatile, reprogrammable memory, suitably a RAM or an EEPROM. The memory 7 may be interrogated by the microprocessor 4 to find the next vacant location and the data is then stored automatically in that location.

As is conventional the memory 7 may have a special location reserved for the last number dialled, which number can thus be redialled at a single keystroke by recalling the contents of this particular memory location.

The information encoded in the bar code may be purely numeric, i.e. a single telephone subscriber number, or it may additionally (or alternatively) contain alphabetic information e.g. the name, and possibly the

address of the subscriber.

Apart from the memory management scheme mentioned above where data is stored in the next available location other schemes may be used where the data is automatically sorted into alphabetic or numeric order.

At the same time as data is read from the bar code 15 by the reader 8 and stored in memory 7 the information is also displayed on the display 6 under the control of microprocessor 4. Thus the information from the bar code is presented to the user in an intelligible manner.

Furthermore, pressing the "SEND" key at this stage will initiate a call to the telephone number on the display under the control of the microprocessor 4, enabling the user immediately to dial a number printed in bar code form without have to manually dial the number. Note that only a single keystroke is needed to dial the newly-read number.

The light source 10 may be connected to a power source 13 via a switch 14 activated by actuation of a specific one of the keys 5b as mentioned above. The relevant key may for example, carry the word "READ" or some other such appropriate legend. Hence the bar code reader can be actuated by the user whenever it is desired to read a bar code and automatically store the data in memory 7.

After the bar code has been read and the data stored in the memory 7, the data can be accessed by the user via the keypad 5 and viewed on the display 6, e.g. by scrolling through the contents of the memory 7 in known

manner for example using the * and # keys as "UP" and "DOWN" respectively. Alternatively the user may be able to apply a GO TO command to access a particular memory location.

When the desired telephone number has been located and is displayed on the display 6, the user may simply actuate the "SEND" key to initiate a call to that particular number under the control of microprocessor 4.

It will be evident to a person skilled in the art in view of the foregoing description that various modifications may be made within the scope of the present invention. In particular the bar code reader may be mounted at a corner of the telephone housing. Also, the bar code reader may be incorporated in telephone types other than portable cellular radios. Moreover, the bar code reader need not be integral with the telephone, but may be an external accessory with a data link, e.g. in the form of a cable, which can be coupled by a suitable connector on the telephone to the subscriber number memory inside the telephone.

CLAIMS

1. A telephone comprising memory means, and a bar code reader for reading data from a bar code external to said telephone, the bar code reader being coupled to the memory means for transferring to said memory means data corresponding to the data read from the bar code.
2. A telephone as claimed in claim 1, comprising means for selectively actuating the bar code reader.
3. A telephone as claimed in claim 1 or claim 2 wherein the bar code contains a telephone subscriber number, and the memory means is adapted to store a plurality of subscriber numbers.
4. A telephone as claimed in claim 3, including actuation means for initiating dialling of the telephone number read from the bar code.
5. A telephone as claimed in claim 3 or claim 4 including means for selecting one of the subscriber numbers stored in the memory means, and actuating means for initiating dialling of the selected number.
6. A telephone as claimed in any of the preceding claims, which telephone is in the form of a one-piece portable apparatus.
7. A telephone as claimed in claim 6, which telephone is in the form of a radio telephone apparatus.
8. A telephone as claimed in claim 7, which telephone is in the form of a cellular radio telephone.

9. A telephone as claimed in any of the preceding claims wherein the memory means is a non-volatile memory.

10. A telephone as claimed in any of the preceding claims, wherein the memory means is a re-programmable memory.

11. A telephone as claimed in any of the preceding claims further comprising visual display means for displaying data read from the bar code.

12. A telephone as claimed in any of the preceding claims, wherein the bar code reader is integral with said telephone.

13. A telephone substantially as herein described with reference to the accompanying drawing.